

Monoculture and mixed biofilms of *Listeria monocytogenes* and *Pseudomonas fluorescens* – effect of different culture media and temperatures

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Like most microorganisms, *Listeria monocytogenes* and *Pseudomonas fluorescens* are able to form biofilms and are rarely found as monoculture biofilms in natural environments. Previous works showed that associations between bacteria from different genus commonly found in food-processing environments may affect their growth, attachment and biofilm formation. This work studied *L. monocytogenes* and *P. fluorescens* monoculture and multispecies biofilm formation, and investigated how different culture media and temperatures may influence such bacterial interactions.

L. monocytogenes strains assayed were CECT 4031^T, 747 and 994 (food isolates), 1559 (environmental isolate) and 1562 (clinical isolate). *P. fluorescens* strains used were ATCC 27663 and PF7A (food isolate). Each strain was tested for monoculture and mixed culture biofilm formation with each one of the other bacterium's strains. Assays were performed during three days in 96-weel microtitre plates, at 4°C, 22°C and 37°C. Brain Heart Infusion (BHI) and Skim Milk (SM) were the culture media and biofilm formation was assessed by Crystal Violet staining.

Overall results showed that both media and temperature affect biofilm formation, as monoculture and as multispecies biofilms, and confirmed that the influence of different bacterial genus on biofilm formation is dependent on strains. Although a decrease of biomass was observed on multispecies biofilms formed at 22°C in SM and at 37°C in BHI, significantly higher OD values were found at 4°C in both media, and at 22°C in SM, indicating that the combination of these two bacteria on meat and dairy food processing environments may seriously compromise food safety potentiating higher contamination levels.